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Report of the New Hampshire Forestry Commission.

THE second report of the New Hampshire Forestry Commission analyzes the condition of the White Mountain region in relation to its timber-supply, the flow of water-power rivers which rise in it, and the commercial value of the scenery. The commissioners declare that the necessity of destroying the forests which cover the White Mountains does not exist, and has never existed; they show that the timber can be cut when it is of the greatest value in such a way that the growth of another crop of trees need not be endangered, and that the integrity of the forest over the whole territory can, with the application of scientific forest-methods, be perpetuated forever.

The adoption of such methods a quarter of a century ago would have preserved the beauty of the scenery for which this region is famed; the lumbermen would have made, in the long run, more money than they ever have made, and the full-fed rivers would have rolled to the ocean everlastingly with undiminished flow. Rational and practical methods, however, have not been followed in New Hampshire any more than they have in other parts of the country. Unwise methods of cutting the timber and the degradation of the soil of the forest-floor after the trees have been cut have reduced the capacity of the region, as a whole, to produce timber. In some portions of the White Mountain territory the forest-conditions are said to have been permanently ruined by the destruction and removal of the forest-floor itself. The soil has been burnt out and swept away down to the inner rocks, leaving bare slopes upon which trees can never grow again for lumber or for any other use. Over some areas the beauty, attractiveness and value of the unequaled White Mountain scenery, every acre of which is needed for the summer playground of the urban population of the United States, has been entirely blotted out, and this extinction of sylvan beauty and of its commercial value is permanent.

The destruction of the forests, too, has reduced the capacity of the White Mountain region as a natural storage reservoir for the retention and distribution of water. How great the damage to the water-storage capacity of the region really is can only be surmised, as the flow of all the rivers was not measured before the removal of the covering of the mountain-slopes was begun; and numerous dams and artificial reservoirs constructed on the upper portions of the New Hampshire rivers would naturally prevent the first effects of the destruction of forest-conditions on the mountains from being recognized. Artificial reservoirs would hold back the water in times of flood, and would thus equalize the flow of streams in periods of drought. But artificial reservoirs cannot be used safely on a large scale as substitutes for Nature's great storage reservoir—the mountain forest. When the mountain forest is destroyed artificial reservoirs on the streams below are gradually filled up by soil, sand and gravel washed down from the hills.

Men and women, unless they have devoted special thought to the subject, do not recognize these dangers, because the evil results growing out of the mismanagement of the forest are developed slowly and gradually. The people who make the mistakes do not usually live to see their full consequences unfolded. They live and die, thinking they have done no mischief and wrought no change; then when another generation begins to feel the ruinous effects of the policy of their ancestors, it is too late for action of any kind. History abounds with such lessons, but the people who need them usually give little heed to such warnings.

The report wisely calls attention to an abuse of the mountain streams of the state, already revealed in its effects in a striking degree. The choking and befouling of the rivers with sawdust and saw-mill refuse is ruining some of the most attractive features of the mountain scenery and destroying the fishermen's interest in the region. This abuse of the streams menaces also, and in a serious manner, the health of the people living on their banks. The commissioners insist that if this policy is continued it will, in time, result in filling up and destroying the reservoirs which have been constructed along the upper portions of the mountain rivers.

The commission recommends the establishment of a permanent forestry commission, to consist of the Governor, ex-officio, and four other persons specially fitted for the work, to be selected in equal numbers from the leading political parties of the state, who shall be appointed by the Governor, with the advice of the council, and so commissioned that the office of one shall become vacant each year; and that the selectmen of the several towns in the state be constituted fire-wardens by their several towns, whose duty it shall be to watch the woods, and whenever a fire is observed therein to summon such assistance as they may deem necessary, go at once to the scene, and, if possible, extinguish it before it has made such progress as to be irresistible. In regions where no town organizations exist the county commissioners are to be empowered to appoint the fire-wardens and to pay for their services for the time actually employed in their duties, the money to be repaid by the towns in which such fires occur, and, in the absence of town organizations, by the county.

At this writing it is doubtful if the legislature of New Hampshire adopts the recommendations of the commission. The forest-property of the northern part of the state is chiefly in the hands of powerful corporations, who have purchased it for the purpose of converting the trees into money in the most rapid manner possible. They appear indifferent to the future of this region, and the appeals of those persons who realize that the future wealth and prosperity of the state is to be largely dependent upon its attractiveness to summer visitors, do not make much real headway in the community, owing, no doubt, to the fact that this report, like many publications of its class, while it points out and explains in a clear and forcible manner the

dangers of the situation, does not present a good practical plan for meeting them. People are slow to believe, especially if their immediate interests point in another direction, that the White Mountains, without their forest-covering, will attract less visitors than they do at present, or that the streams upon which some of the most important manufacturing interests of New England are dependent will suffer from the destruction of these forests.

The bill relative to a forestry commission, now being considered by the Pennsylvania legislature, has been endorsed by the State Board of Agriculture, the Academy of Natural Science of Philadelphia, the Engineers' Club of Philadelphia, the Commercial Exchange of the same city, and by many other prominent and influential organizations. It provides that the Governor shall appoint a commission of two persons, one of whom is to be a competent engineer and the other a botanist practically acquainted with the forest-trees of the commonwealth. It shall be the duty of the commission to examine and report upon the condition of the important water-sheds of the state for the purpose of determining how far the presence or absence of the forest-covering may affect the water-supply, to report upon the amount of standing timber in the state of commercial value, and to devise a measure for securing a supply of timber in the future. Two years are allowed the commission to complete their labors, and the members are each to receive a salary of $2,500 a year, with necessary expenses.

Professor Rothrock, the secretary of the Pennsylvania Forestry Association, in an argument for the passage of this bill, points out the fact that the destruction of timber in the state of Pennsylvania is now vastly in excess of its annual production. "Taking the country at large," he says, "we cut each year twice as much timber as is reproduced. What would be the rate of forest-destruction fifteen years hence? Where is the future supply to come from?. But few rafts now come down the waters of the Delaware. The vast forests about the head-waters of the Lehigh are practically gone. The splendid white and rock oak, which for so many years has reached the market of the Juniata region, is almost exhausted, and even in the lumbering regions of the West Branch, vast areas are denuded of their most important trees. Forest-fires destroy about two millions' worth of timber each year; timber thieves plunder and often escape unpunished; cattle kill the young shoots of the growing timber, and we are practically making no effort to protect and renew the forest-growth."

The Treatment of Waste Lands in the Low Countries.—I.

IT is one of the most instructive lessons for a new country to examine the methods by which an old one has been made, or the processes by which it has been developed into its maturity, and the subject of the encroachment of sand upon the arable lands and forests in the neighborhood of the low coasts of New Jersey and Cape Cod has drawn attention to the necessities of dealing with just such a problem in our own case, as the inhabitants of the Netherlands have been struggling with successfully for the last 500 years. It may therefore prove interesting to consider some of the methods of the Dutch for the cultivation of their own wastes of sand for our own instruction.

It is a common idea that the lands of Holland and Belgium are universally rich, but it is quite otherwise. Their great productiveness under good cultivation has given rise to this impression. In fact, over one-half the entire area of Holland is light drifting sand, and yet another extensive portion is covered by turf and heather wholly sterile in its natural condition; and the great lesson Dutch husbandry teaches to us and to other countries is, how to make very poor land profitable, or at least productive. These sandy lands are to be found all along the shores just inside the little ridge of hills which form the coast, and are themselves a deposit of sand. They also lie to the south and west of the Zuyder Zee, sometimes in districts of 40,000 or 50,000 acres. Nothing seems more hopeless than the attempt to bring them under cultivation. They are deep and utterly leaky, so that after a week of rain they will be dry as a desert, and yet the indefatigable industry of the Dutch succeeds in making them fairly productive.

To do this, the land, which lies in little humps and inequalities of surface, here and there diversified with patches of moss, but often bare, is first reduced to a level by means of the shovel, the aim always being to bring the patch to be cultivated below the surface of the surrounding land. Sometimes such patches, containing many acres, are seen sunk several feet below the level of the contiguous ground. This prevents the struggling crop from being entirely covered with the drifting sand, which blows about like snow. When circumstances do not favor one of these cellar-like excavations, the end sought is obtained as nearly as may be by small fences of reed or straw matting, run across the land at intervals, to form eddies to gather the sand and prevent its sifting over the whole field.

No more unpromising process of getting a crop can be imagined, yet the cultivator next strews in his manure in rows, and on it drops his potatoes, and when the time comes he finds they are worth digging, unless he wholly loses the trail in his row. It is a singular fact that on these bottomless sands liquid-manure, applied principally to the growing crops, produces the best results, in spite of the rainy climate. The quality of roots grown on this arid surface is excellent, particularly of the potato.

Another way of treating these sandy lands, and one more beneficial in the long run, is to cover them with small plantations of trees. These, by careful tending, get a foothold, and though growing but slowly, begin at length to shed their leaves, which, after numerous weary years, finally form a mold, which in its turn affords nutriment to the tree itself. The noble forest at The Hague, containing several hundred acres of trees, some of which must be four hundred years old, has sprung from just such small beginnings.

But the worst of these sea-sands is not their barrenness. There are districts in which they are so abundant that they menace the good soils adjoining by sweeping over them. Here Government comes to the aid of the proprietors, and helps to keep the sands at bay by making appropriations for fighting them in the ways already referred to, and by covering them with turf or heath. In some of the provinces the flying sands have been fought systematically for 500 years by the cultivators, and they fight them still, as the inhabitants of the Cape Cod and Jersey shores will have to do. But for hard work and poor returns, the most sterile portions of the northern United States or the British Provinces cannot vie with these shores of Holland.

The cultivation of sandy soils of a better quality than these is a very interesting study. Some of the inland sands of Holland have settled into plains, or have been at some period the beds of fresh-water lakes and ponds. These are often found very productive, and sometimes possess peculiar qualities, leading to the inference that no man can tell, except by experience, what crops any given piece of land is best adapted to grow, or of what it is capable, thus pointing out to the cultivator the wisdom of never tiring of experiment with a view to determining wherein the greatest value of his land consists.

There are two well-marked districts in Holland, each containing but a very limited quantity of sandy land, to be measured almost by hundreds of acres, hardly running into thousands, in one of which is grown grapes, and in the other flowers, in the greatest perfection. In one of these are produced the world-renowned Hyacinths and Tulips of Haarlem, which grow to unrivaled perfection, and which have become articles of vast commerce in Europe and the most distant parts of the world. The environs of this town in the spring are a garden of fragrance and beauty. Though the soil in which this result is produced does not appear to be different from that of other localities in the region, yet the confinement of this profitable culture to so limited a tract would seem to indicate that it possesses some peculiar virtue, for the bulbs when transplanted to other parts of Holland, it is said, are apt to deteriorate.

The other instance is that of a little district called the Westlands, near The Hague, in which a large purple grape of great repute is grown in perfection. The land here is covered by brick walls about eight feet high, facing the south, and varying from 150 to 500 feet in length. They are built in an enduring but cheap form, only a single brick in thickness, supported by hollow abutments about fifteen feet apart, standing in the rear; on these the Grapes are trained. The Grape-lands are but slightly manured, and the soil on which the fine fruit is grown, when dry and rubbed in the hand, seems to be nothing but pure fine sand slightly discolored. Yet it doubtless possesses some peculiar virtue for the Grape, as the Haarlem soil does for flowers, and as certain soils along the Rhine produce vin-

tages of special quality, indicative of some hidden virtue apart from natural fertility.

The Westland Grape is severely pruned, only two shoots being permitted to grow from the main stalk—one trained to the right and one to the left along the foot of the wall near to the ground. From these lateral stalks perpendicular shoots are permitted to grow at a distance of one foot apart toward the top of the wall. Each perpendicular shoot is allowed to bear two bunches of grapes. These will average a little over half a pound apiece. The estimated product of a wall in full bearing is fifteen pounds to every twelve feet. Some of the plants are over fifty years of age. In the early spring the vines are so closely trimmed down that they cover but a small portion of the wall. They begin to ripen early in September and last into November, large quantities of them being exported. They somewhat resemble the Black Hamburg in quality, and are highly esteemed in England, which affords them a large market. The largest bunches weigh a pound apiece; the calculation being that fifteen pounds of grapes will be produced to every twelve feet of wall.

In winter the vines need a slight protection of mats, woven from the long, coarse grass in which the partially submerged lands of this country abound. In addition to the matting, portable windows are used, which stand at an angle against the wall when it is desirable to force the growth, but these are rarely employed. The hollow stalk of the vine, large enough to stand on end when cut, is used extensively for thatching.

Notes on the Forest Flora of Japan.—VII.

IN the forests of Japan are found two Lindens. They are both extremely common in Hokkaido, and in the other islands are rare, and confined to the mountain-slopes of considerable elevation. The larger of the two, Tilia Miqueliana, is a handsome tree, often growing in central Yezo to the height of one hundred feet and forming a trunk four or five feet in diameter. As it is only seen crowded among other trees in the forest, the branches are short and the head is oblong and rather narrow. The bark, like that of all the Lindens, is broken by longitudinal furrows, and is light brown or dark gray. The young branchlets are unusually stout for a Linden-tree, and in their first season are covered, as are the large ovate-obtuse winter-buds, with hoary tomentum. The leaves are deltoid or deltoid-obovate, abruptly contracted at the apex into broad points, obliquely truncate or sub-cordate at the base, coarsely and sharply serrate with incurved callous teeth; they are four to six inches long, three or four inches broad, rather light green, and more or less puberulous on the upper surface and pale and tomentose on the lower, especially on the prominent midribs and primary veins, in their axils, and on the stout petioles, which are two or three inches in length. The peduncle-bract is rounded at the apex, sessile or short-stalked, three or four inches long, from one-third to two-thirds of an inch broad, and, like the slender stems and branches of the flower-cluster and its bractlets, covered with pale tomentum. The flowers appear in Sapparo toward the middle of July. Like those of the American Lindens and of two species of eastern Europe, Tilia petiolaris and Tilia argentea, which Tilia Miqueliana resembles in several particulars, the flowers are furnished with petal-like scales, to which the stamens, united in clusters, are attached. The sepals are ovate-acute, tomentose on the two surfaces, especially on the inner, and shorter than the narrow obovate petals. The style, which, like the stamens, is longer than the petals, is coated at the base with thick pale hairs, which also cover the ovary. The fruit, which ripens in October, is ovate to oblong, wingless, and nearly half an inch long. It is from the inner bark of this species that the Ainos make their ropes.

Tilia Miqueliana* is comparatively little known, having at one time been confounded with Tilia Mandshurica, which does not reach Japan; and the figure on page 113 of this issue, the first which has been published, will give an idea of its character and the beauty of its foliage and flowers. This noble tree will probably thrive in the northern states, as plants which have been growing for a few years in the Arnold Arboretum appear perfectly hardy. In Europe it is cultivated as Tilia Mandshurica (Kew), and as Tilia heterophylla (Paris), although it does not appear to be much better known there than it is in the United States.

The second Japanese Linden is a small tree, rarely growing more than fifty or sixty feet tall in Hokkaido, where, perhaps, it is rather less abundant than Tilia Miqueliana. In books it appears as Tilia cordata, var. Japonica, but Tilia cordata is a synonym for Tilia ulmifolia, a common European and north Asian species, so that unless the Japanese plant is found specifically distinct, which is not probable, it should be known as Tilia ulmifolia, var. Japonica. It is a round-headed tree with dark brown bark, slender red-brown branches, glabrous, like the buds, even when young, and marked with oblong pale lenticels. The leaves are broadly ovate or nearly orbicular, contracted at the apex into short or long broad points, and usually cordate, or occasionally oblique, at the base, and sharply serrate, with incurved callous teeth; they are membranaceous, light green and lustrous on the upper surface, light green, pale or nearly white on the lower surface, which is marked by conspicuous tufts of rufous hairs in the axils of the principal veins, three or four inches long and two or three inches broad. The peduncle-bract is from three to three and a half inches long, half an inch broad, with a slender stalk sometimes an inch in length. The stem and branches of the flower-cluster are slender and glabrous. The sepals, which are acute, slightly puberulous on the outer surface, ciliate on the margins, and furnished on the inner surface at the base with a large tuft of pale hairs, are shorter than the narrow acute petals; the ovary is clothed with white tomentum. The fruit is oblong, or slightly obovate, and covered with rusty tomentum. The petaloid-scales, which Maximowicz† found developed in some of the flowers of this tree, I have not seen.

This is the only Linden cultivated by the Japanese, who occasionally plant it in temple gardens, especially in the interior and mountainous part of the empire. It was introduced in 1886 into the Arnold Arboretum, and has so far proved hardy. It is, however, scarcely distinct enough from the European plant to make its cultivation as an ornamental tree particularly desirable.

Elæocarpus, a genus of the Linden family distributed with many species through tropical Asia, Australia and the Pacific islands, is represented in Japan by two fine trees, found only in the extreme southern part of the empire. Of these I only saw Elæocarpus photinifolia, a noble tree, planted in the gardens of a temple in the sea-shore town of Atami, where there are the largest Camphor-trees in Japan and good specimens of a number of other southern trees.

The Rue famile has a number of woody plants in Japan. Of these, Skimmia Japonica is the only one which is much known in our gardens, although Phellodendron Amurense and Oriza Japonica are now found in most large botanical collections. Evodia rutæcarpa, a shrub or very small tree, with large, pinnate, strong-smelling leaves and terminal heads of minute flowers, although not at all handsome, is an interesting plant, as it is from the bark that the Japanese obtain the yellow pigment which they use in dyeing. For this purpose the bark, which, with the exception of the thin brown outer coat marked with pale lenticels, is the color of gamboge, is torn off in long strips, air-dried, and sent to the large cities. Evodia rutæcarpa, which also inhabits central China and the Himalayas, is now becoming rare in Japan, and I only saw it on the coast near Atami; it is said to be still abundant, however, in Aidsu and on the peninsula of Yamato. The scarlet aromatic fruit is used by the Japanese in medicine.

In Xanthoxylum there are four Japanese species. Of these, the most common and the most widely distributed at the north and in the mountainous regions of the main island at elevations of from 2,000 to 4,000 feet above the sea, is Xanthoxylum piperitum. It is a bushy shrub with

* Tilia Miqueliana, Maximowicz, *Mél. Biol.*, x., 585.
Tilia Mandshurica, Miquel, *Prol. Fl. Jap.*, 206, in part.—Franchet & Savatier, *Enum. Pl. Jap.*, i., 67, in part.

† *Mél. Biol.*, x., 585.

many slender stems, or rarely a small tree with a well-developed trunk three or four inches in diameter; it is always a handsome plant, with dark or often nearly black branchlets marked by pale spots and armed with stout straight spines; with narrow, unequally pinnate leaves with about six pairs of ovate, pointed leaflets, very dark green on the upper surface and pale on the lower; with small inconspicuous flowers and with heads of handsome showy fruit four to six inches across, the pods rusty brown, but the seeds, which do not drop for some time after the pods open, black and lustrous. The fruit of this plant is gathered in large quantities by the Japanese before the pods open and is used as a condiment and in cooking, as we use pepper. In Hakodate and other northern towns it is commonly exposed for sale throughout the year.

A nobler plant than Xanthoxylum piperitum, and certainly one of the most beautiful of the genus, is Xanthoxylum ailanthoides, which I only saw in the Hakone Mountains, where it is abundant, and near the coast at Atami. It is a round-topped, broad-branched tree, sometimes fifty or sixty feet tall, with a trunk twelve to eighteen inches in diameter, covered with pale bark, upon which the corky excrescences, common in many species of this genus, are well developed. The branchlets are stout, pale and covered with short stout spines. The leaves vary from eighteen inches to four feet in length and are unequally pinnate, with about ten pairs of lateral leaflets and stout red-brown petioles; the leaflets are dark green and conspicuously marked on the upper surface with oil-glands, pale or nearly white on the lower surface, ovate-acute, often slightly falcate, long-pointed, rounded or subcordate at the base, finely serrate, stalked, four to six inches long and two to four inches broad. The flowers, which are greenish white, and small, and inconspicuous like those of all the plants of this genus, appear in the Hakone Mountains at the end of August or early in September in clusters four or six inches across. The fruit I have not seen. In habit and in foliage this is one of the most beautiful trees which I saw in Japan, but as it does not range far north or ascend to the high mountains, it is not probable that it will prove hardy in our northern states. The other Japanese species of Xanthoxylum are shrubs of no great beauty or interest.

Simarubæ, a mostly tropical family, to which the familiar Ailanthus of northern China belongs, appears in Japan only in Picrasma guassioides, a member of a small tropical Asian genus, which, as an inhabitant of Yezo, seems to have strayed far beyond the limits of its present home. As Picrasma ailanthoides appears in the forests near Sapparo, it is a slender tree twenty to thirty feet in height, with a trunk about a foot in diameter. The branchlets are stout, dark red-brown and conspicuously marked by pale lenticles. The leaves are unequally pinnate, with slender reddish petioles and four or five pairs of lateral leaflets, which increase in size from the lower pair to the uppermost; they are membranaceous, very bright green, ovate-acute, finely serrate, stalked, three to five inches long and an inch to an inch and a half broad. The flowers, which are produced in loose, long-branched, few-flowered, axillary clusters, are yellow-green and not at all showy, but the drupe-like fruit is bright red, and handsome in September, when the thickened branches of the corymb are of the same color. It is, however, for the beauty of the color of its autumn foliage that Picrasma guassioides should be brought into our gardens. The leaves turn early, first orange and then gradually deep scarlet, and few Japanese plants which I saw are so beautiful in the autumn as this small tree, which, judging from its northern home in Japan, may be expected to flourish in our climate. It is a plant of wide distribution, not only in Yezo and Hondo, but in Corea and in northern and central China; it occurs on Hong Kong and Java, and is common on the sub-tropical Himalayas, which in Garwhal it ascends to an elevation of 8,000 feet above the ocean. To the bitterness of the inner bark, which in this particular resembles that of the Quassia-tree, of the same family, it owes its specific name. *C. S. S.*

Foreign Correspondence.

London Letter.

THE annual general meeting of the Royal Horticultural Society was held last Tuesday. Sir Trevor Lawrence presided, and in commenting upon the year's work of the society he pointed to the excellent results obtained at Chiswick, where many important trials of plants had been made. Financially the society is in a fairly satisfactory condition. Its income for the present year is estimated at £4,800, and its expenditure at £4,500. There has been a considerable increase in the number of fellows, the journal continues to give satisfaction, and the meetings, conferences and exhibitions have been most successful.

Besides the great spring show in the Temple Gardens, which will be held this year on May 25th and 26th, the Council have decided to hold a show at Chiswick on July 11th, at which prizes will be offered for local exhibits, and an autumn show will be held in the Royal Agricultural Hall, Islington, from August 29th to September 1st, inclusive.

A novel feature in the programme for this year is the examination of students and others in the principles and practice of horticulture, and a scheme is on foot for providing scholarships of the value of £26 annually, whereby the most promising students may be enabled to pursue their studies in connection with the society's gardens at Chiswick, or elsewhere. The first examination was held in the early part of the year at the request of the Surrey County Council, when seventy-two candidates presented themselves, with the result that twelve passed to the satisfaction of the examiners in the higher grade and seventeen in the lower grade. A second examination will be held in May of this year, which it is proposed to extend to candidates in all parts of England.

American horticulturists will doubtless be interested in the list of the principal subjects upon which lectures are to be given at the meetings of the society this year. These include: "Some effects of growing plants under glass of various colors," The Rev. Prof. Henslow, M. A. "Flowers of the Riviera," Monsieur Henry L. de Vilmorin. "Orchid Life in Guiana," Everard F. im Thurn. "How to Solve Chemical Questions concerning the Soil without Chemistry," Prof. Cheshire. "Fritillarias," Mr. D. Morris, M. A. "Hardy Rhododendrons and Azaleas," Sir J. T. D. Llewelyn, Bart. "Cannas," Mr. J. G. Baker, F. L. S. Sir John Lubbock, Bart., has also been invited to give a lecture.

The exhibition of plants concurrent with the general meeting was a particularly good one for the second week in February. Orchids were well represented by groups of showy popular kinds as well as numbers of new and rare plants.

Cymbidium grandiflorum was shown in flower, the same plant having flowered last year, which is noteworthy, this species having the reputation of being difficult to bloom. It was described by Reichenbach in 1866 from a specimen flowered by Veitch, of Exeter, and named Hookerianum, in compliment to Sir Joseph Hooker. It was afterward proved to be identical with C. grandiflorum of Griffith. It is a native of the eastern Himalaya and may be briefly described as a C. giganteum, with larger flowers colored bright green, except the lip, which is creamy white with reddish blotches. It obtained a first-class certificate.

Phajus amabilis is a new hybrid of more than ordinary merit. Its parents are P. grandifolius and P. tuberculosus, and it was raised by Messrs. J. Veitch & Sons. It has plicate stoutish leaves, a scape a foot high bearing four flowers, which are nodding, three inches across, of the form of P. tuberculosus, the sepals and petals blush white, tinged with dull brown, the lip large, crisped and wavy, claret-colored, lined with coppery red, flaked with white, paler on the lateral lobes. It is singular that this plant should differ so widely from the beautiful P. Cooksoni, flowered three years ago and raised by Mr. N. C. Cookson from P.

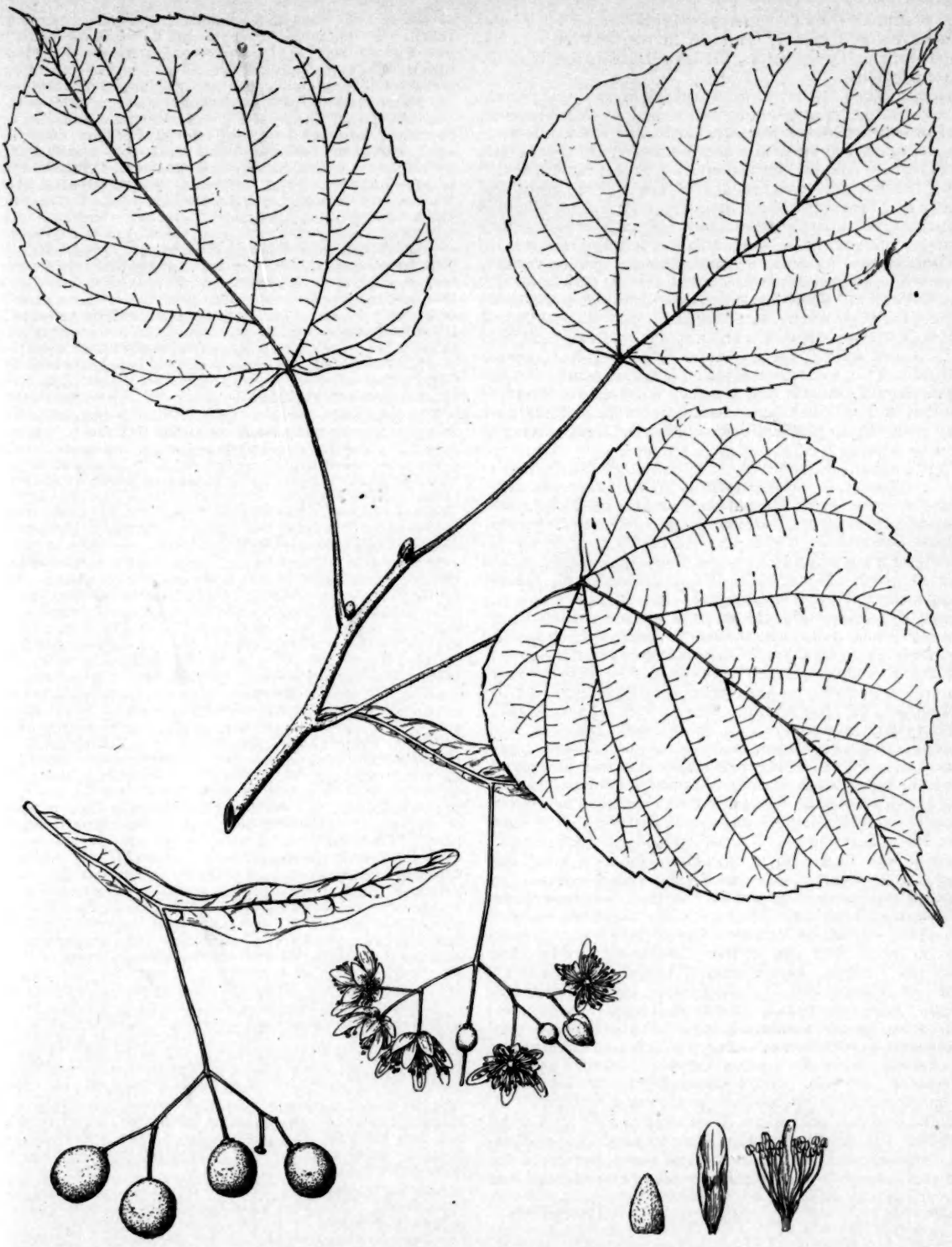

Fig. 19.—Tilia Miqueliana—See page 111.

tuberculosus and P. Wallichii ; the latter scarcely differs in the form and color of its flowers from P. grandifolius.

Phalænopsis Schilleriana, var. vestalis, is a pure white variety, which was described by Reichenbach in vol. xvii. of *Gardeners' Chronicle* from a plant imported by chance among a batch of the type. A second plant was imported in the same way by Messrs. H. Low & Co. about four years ago, and this was shown in flower by the Clapton firm. It differs from the type in having less gray marbling on the leaves, a green, instead of purple, under surface, and green-tipped roots. The plant had a scape a foot long bearing six flowers. Its value was set down at fifty guineas.

Cypripedium conco-lawre is a hybrid between C. concolor and C. Lawrencianum, raised by Sir T. Lawrence.

It is pretty, as are all the concolor hybrids, and it has large flowers colored creamy white, with rosy mauve reticulations and small purple dots, the lip a shade darker than the other segments.

Dendrobium Owenianum, a hybrid between D. Wardianum and D. Linawianum, was raised by Mr. Cookson, and shown in flower by Messrs. F. Sander & Co. Its flowers are as large as those of a good variety of D. Wardianum, and they are colored like that species, except the lip, which has a reddish brown blotch at the base. The plant looks sturdy and most promising in every way. It obtained a first-class certificate. Other new or rare Dendrobiums shown by Sander & Co. were D. Sanderæ (nobile × aureum), D. nobile, var. Amesiæ, an exceptionally pretty variety, pure white, with a maroon-colored throat, and D. nobile, var. Ballianum. From the same establishment came some choice varieties of Lycaste Skinneri, one named leucoglossa, with rosy segments and a white lip, being noteworthy. A new hybrid Lælia named Maynardii was another of Sander & Co.'s choice exhibits. It is the result of crossing L. pumila Dayana and Cattleya dolosa. Its stature is like that of the former parent, while in color the flowers are deep rose, the lip purplish crimson, crisped and spreading as in L. dolosa.

Cypripedium Winnianum, a hybrid between C. Druryi and C. villosum, is like the former in the shape and color of the flowers, with the shining surface of C. villosum. Cynorchis grandiflora was again shown by its importers, Messrs. Lewis & Co. It is a pretty Orchid, certainly deserving of a place among garden Orchids if it only proves easy to grow. Masdevallia Hincksiana and M. Schrœderiana were represented by well-flowered specimens, the former of hybrid origin, the latter a species related to M. acrochordonia, with large flowers, colored rich chocolate, with a blotch of white, and long orange-colored tails.

Arum Palestinum, which was distributed several years ago under the name of A. sanctum, is a good plant for the greenhouse, its large spathes nine inches by four inches, colored dark maroon-purple, erect black spadices, and apple-like fragrance, being really attractive. It was shown in flower. White Lilacs, grown in pots, and very well-flowered, were shown—bushes about two feet high, clothed with healthy leaves and crowded with clusters of pure white flowers; such as these are valuable in February. The kinds were Marie Legrange and Alba grandiflora. Sparmannia Africana was shown in a new character as a small pot-shrub, the pots only five inches across, and the plants two feet high, well-branched, and each branch bearing a cluster of flowers. These specimens were the result of starving the plants by not repotting them in the spring, keeping them in small pots and cutting them back hard in April. Pandanus inermis, var. variegata (Baptistii), was again shown by Messrs. Veitch. There were also various kinds of late Chrysanthemums, Ericas and other hard-wooded plants from Messrs. Low & Co. and Cutbush & Sons. Mr. Rivers sent a collection of oranges which had been grown under glass, and which were a centre of interest both for their color and size. Orange-blossom, by the way, is an expensive article in England in January and February; for a guinea one can obtain no more than would fill a small cigar-box. It might pay Floridans to send Orange-blossom to the English market in the first three months in the year. Of course, it is chiefly in demand for weddings, but these are mostly affairs of early spring.

London. *W. Watson.*

Cultural Department.

Lily Culture in Pots.

A CONSIDERABLE number of species and varieties of Lilies are well adapted for pot-culture, and the plants, when well grown and flowered, have an excellent effect in greenhouse or conservatory. Indeed, those who would see the finer species and varieties of Lilies in full beauty should grow them under glass, not that they require the aid of glass through all the periods of their growth, but they need it when in flower, and immediately afterward, to perfectly mature the bulbs. Mr. H. J. Elwes, writing on Lily-culture in his *Monograph of the Genus Lilium*, recommends that Lily bulbs be planted in a prepared bed, in a house specially built for them, and the lights made to draw off, or arranged in some way that the plants could be exposed to the weather if it was thought desirable at any time. Mr. Elwes recommends a bed of prepared soil, two feet deep, with over nine or ten inches of drainage. Part of the bed should be formed of a compost from which peat is excluded, and the other part of it should be half of peat and a quarter of leaf-mold, loam and sand, with the addition of charcoal, being used where needed. A part of the house should also be set aside to contain a bed built of brick, in which to plunge Lilies in pots. "All newly imported bulbs should be planted in small flower-pots," says Mr. Elwes. "However large a bulb may be, and whatever depth of soil it may require when established, it is always good policy to start in a small pot, and either shift it to a large one, or plant it out when well rooted." I do not intend the following remarks on culture for famous cultivators who have had more experience than I have; but questions are frequently asked about Lilies, and failures are so frequently met with, especially when grown in pots, that as I have found no difficulty with them, my successful experience may be helpful.

The most useful of all Lilies for culture in pots is L. auratum, and perhaps the trade would consider this the only profitable Lily. L. auratum is sold cheaply enough now, but I can well remember when small bulbs cost a guinea, and large ones three guineas. From fifty to a hundred bulbs can now be obtained for that money.

Some persons have a fixed belief that L. auratum degenerates when cultivated year after year in pots. It may do so under bad cultivation, but under other conditions it improves year after year. The first year they must not be overpotted; this is a grave error. Small bulbs may be planted in pots four or five inches in diameter (inside measurement), medium-sized bulbs in six-inch, and the larger ones in seven-inch. The soil I use is a good yellow loam, two parts, with an addition of one part fibrous peat. Leaf-mold is not necessary, but it may be used if peat cannot be obtained. Drain the pots well, and plant the bulb in the centre of each, moderately firm, a little clean coarse sand to be placed under and over each bulb. The crown of the bulb should be half an inch at least under the soil, and the pots should not be filled up to the top by about one inch. I find I have omitted to mention that some decayed manure should be added to the compost, and coarse white sand if necessary. When the plants are potted, plunge them in cocoanut-fibre refuse in frames well over the rims; if the potting-compost was moderately rich at the time of using it, no water will be needed until the plants show through the fibre. If the soil in which they are growing then seems to be very dry, give them a good supply of water. It is before the plants arrive at this stage that much mischief is done by inexperienced cultivators. Instead of plunging the newly potted plants as I have advised, they are placed on the stage in the greenhouse, where the soil soon gets dry upon the surface, and water is applied freely before any roots are formed. The result is that the bulbs rot at the base more or less, and do not start to grow at all, or but weakly. I have also seen the bulbs after being repotted plunged or placed under the stage of the greenhouse, where some of the poor bulbs become saturated with the constant drip from above, and those not under a drip may even suffer from dryness. The only sure way to success lies in starting the bulbs as I have recommended. The cocoanut-fibre retains the moisture in the soil without increasing it, and the bulbs are also maintained in a uniform low temperature, so that the roots are formed before any top-growth is made. This is the way in which all bulbs should be started that are intended for greenhouse-culture. Encourage the roots to make good healthy growth before the flower-stems show from the crowns.

Another important point is the repotting. The best time to repot bulbs of this kind is just before they begin to make roots. Lilies are different from the bulbs of Hyacinths, Tulips and Crocuses, in that the roots from the base of the bulbs are always in a plump, sound condition; it is only the roots that issue from the base of the stems that die annually with the stems. Referring again to the bulbs which were starting into growth in the frames, as soon as the stem shows through the fibre, this should be removed with the fingers, leaving the rims of the pots exposed. Admit air freely, removing the lights in fine weather, but closing them at night, and when frost obtains. When the plants have grown so much that they come into contact with the glass, remove them to a light part of the greenhouse where they may get plenty of air. Abundance of

air and light is necessary to keep them in sturdy health. After a time roots will form at the base of the stems very freely. The pots being filled only to within an inch of the surface, and the soil would subside about half an inch more, this space may now be filled in with some rich dressing. This should consist of about equal portions of decayed manure and good fibrous yellow loam. The stem-roots push freely into this and form a perfect mat. When the flowering period is over, and the stems show signs of decay, reduce the water-supply considerably, and do not commit the error of putting them out-of-doors to be saturated with the autumn rains. They flower at different periods between June and October and cannot all be potted at one time. At the time of repotting turn the plant out and with a gentle twist of the stem screw it out from the crown of the bulb. Repot the bulb again in a larger pot without disturbing the useful roots which have been produced from the base of the bulb. The above treatment applies especially to Lilium auratum. Nearly all Lilies grown under glass may be treated as I have advised. L. lancifolium is next to L. auratum in usefulness, and the variety amongst them is very charming. The slender-growing L. tenuifolium is easily managed, and for pot-culture the best varieties of L. tigrinum are very effective, such as the double-flowered variety splendens and Fortunei. L. Hansonii is also a distinct and stately species.—*J. Douglas, in the Gardeners' Chronicle.*

Garden Notes.

CHIONODOXA ALLENI.—The bulbs of this new variety sent out this season by Mr. Whittall were evidently gathered before maturity, and it will be impossible with such material to verify the collector's estimate of its value. At present it is showing only single-flowered scapes, and seems to be a white-eyed C. Sardensis.

BURNT EARTH FOR SEED-PANS.—Mr. Orpet's interesting note on slow-germinating seeds reminds me that I find burnt earth a very satisfactory medium in which to plant seeds which are likely to require a long stratification. This is easily prepared by burning clayey soil in a stove or furnace to red-heat, thus ridding it of all humus and impurities which are likely to cause fermentation and sourness. Seed-pans long kept moist are not only apt to contain sour soil, but they usually develop a crop of moss. These conditions are not possible in seed-pans containing burnt earth.

CYPERUS PUNGENS.—This proves to be a very distinct Sedge. The smooth, round, unjointed stems are from three to five feet long and topped with umbellate leaves, in the way of C. alternifolius. Either in the water-garden or in a greenhouse-tank it is very effective. It is also, when grown into a specimen in a glazed pot, a striking and distinct plant for conservatory or house decoration. Horticulturally it may be considered a magnified C. alternifolius. My plants have never borne seed, but they can be quickly propagated by the numerous side-shoots and probably by cuttings of the tops. This plant has lately been sent out as C. strictus, I believe in error.

Elizabeth, N. J. *J. N. G.*

Window and Greenhouse Plants.

WITH reference to your recommendation in a recent number of GARDEN AND FOREST, I have grown Cypripedium insigne as a window-plant with entire satisfaction. It does well planted wholly in moss, or in loam, moss and potsherds mixed, with but ordinary attention. On plants in my collection there are flowers which expanded before Christmas, or over two months ago, and these will continue in good condition several weeks longer.

Nephrolepis tuberosa is one of the best Ferns for the living-room, not being affected by the dry air, as many other Ferns are. Watered properly, it seems indifferent to other conditions. During summer it may be used as a tub-plant out-of-doors, a position in which few Ferns do well.

Though the Camellia is no longer a popular florist's flower, it is still in the collection of most amateurs who have greenhouses. The proper time to repot it is just after the blooming season, in March or April. It does not do well if over-potted. Good loam, sand and leaf-mold is the best soil, and good drainage is necessary. In summer they need no care other than to be placed in a partially shaded place out-of-doors, the pots partly plunged in ashes.

Bignonia venusta is decorative in the greenhouse at this season. A thrifty specimen, planted in the ground here, is pruned in closely each year after flowering, thus making vigorous young shoots. These are fastened to the roof, and from them at this time are hanging great clusters of deep orange flowers.

Germantown, Pa. *Joseph Meehan.*

WHILE the Carnation will succeed in ordinary soil, from a light sandy loam to fine clay, different varieties require different soils to produce the best results. The best average success is attained in a soil composed of well-rotted turf, with one-fourth its bulk of old manure, adding one bushel of air-slaked lime and one bushel of hardwood ashes to two loads of the mixture.

Acacias make the greenhouse gay during the winter and early spring months with their golden flowers. A. armata, A. cultriformis, A. Drummondii, A. longifolia and A. pubescens are among the best for general utility. They bloom freely, and a temperature of forty degrees is not too low for them. Their cultural requirements are simple, and any ordinary soil will suit them. In summer they may be placed out-of-doors to make new growth.

The large trumpet-shaped flowers of Solandera grandiflora are conspicuous in the greenhouse at this season. The plant is a shrub of somewhat straggling habit, requiring a minimum temperature of fifty-five degrees. It is easy of cultivation and is worth growing for its striking blossoms, which are a dull yellow color. The branches must, however, be trained to wires or similar supports, and they flower most profusely when fully exposed to sunshine.

Cambridge, Mass. *M. Barker.*

Correspondence.

The Protection of Road-sides.

To the Editor of GARDEN AND FOREST:

Sir,—No service your paper can perform is more needed, I think, than the awakening of our rural communities to a sense of the beauty of properly treated road-sides, and a feeling that this beauty has its useful side in making their localities attractive to summer visitors. You have named and rightly found fault with road-side devastators of various kinds. But there is one whom, as yet, I do not think you have held up to public condemnation. This is the lineman, who is perpetually stretching or re-stretching his wires between even our remotest villages. If he works in other districts as barbarically as he worked near Buzzard's Bay last summer, he is not the least harmful of our rural vandals.

Last summer the telegraph lines were repaired between the village of Marion, where I live, and the towns of Wareham, four miles away in one direction, and of Mattapoisett, five miles away in another. And there was not an eighth of a mile in this nine-mile stretch where wreck and ruin had not been wrought. Of course, the big, new poles shone out a ghastly yellow against the background of foliage which largely borders these nine miles of highway. But one did not complain of that, for it was felt to be inevitable, and, moreover, one knew that under Nature's treatment during a single winter they would weather to a more peaceful gray. But the new poles were a good deal taller than the old ones, although to the non-professional eye there seemed no reason why they should be; and in planting them not the slighest care had been taken to do the work in even a rationally conservative spirit. Here, a big Pine-tree had been ruthlessly cut down to give place to a pole which, one felt, might just as well have been set on a neighboring spot where no tree chanced to stand. There, the splendid branches which partially shaded the road had been lopped off as roughly as though by stone hatchets, to admit the free passage of the lifted wires; and almost always more had been thus lopped than the position of the wires demanded. Moreover, shrubbery and smaller trees had been recklessly cleared for the greater convenience of the workmen, and all the débris of big boughs and withered foliage had been left to spoil the beauty of the road-side during the entire summer. Of course, the damage was greater in some spots than in others; but it was so great in many that the aspect of a stretch of road which, before, had been beautifully natural and bowery, was changed into a resemblance with the aspect of the edge of some rude settler's clearing.

We do not pride ourselves greatly on our trees near Marion, but we do pride ourselves on our shrubs and creepers and flowers. The luxuriance with which they grow is surprising, and the borders they make, not only along our wood-roads but along our high-roads too, are of wonderful and very varied beauty. Almost everywhere, on the high-roads, there is a wide strip of waste land between the road proper (or improper—for many of the road-beds are extremely bad) and the rough stone fences which enclose the fields. And this waste land is apt to be thickly overgrown with shrubs and young trees along the fences, and with lower flowering vegetation near the road-bed, forming natural hedges as beautiful as those in any English lane.

But it is not only the linemen who interfere with these, the most strikingly beautiful features of our landscape. The road commissioners or highway commissioners (I do not know their legal title in Plymouth County, but their proper title is road-agents or highwaymen) whet their scythes when their private acres have been mown, and go forth about the middle of August to dull them along the road-sides. There seems no science or art, no reason or plan in their work. Here, where the wild border actually encroaches upon the road, it is left in peace; there, where it discreetly keeps its distance, it is pitilessly cut down clean back to the stone wall. Occasionally one sees the taller, more distant growth left intact; but one feels it has been by accident, not by design, for at the next step some perfectly wanton act of vandalage is noted. Fortunately, road-side Nature is so bountiful and energetic with us that, when one returns the following summer, the signs of August depredation are not often painfully visible—that is, they are not to unaccustomed eyes; it is only the eyes of the old resident which remember that here, where there used to be lovely tall thickets of wild Roses and Viburnum and tangles of luxuriant vines, there is now only rough grass and the sprouts of bushes and vines to come.

Where road-side growth is so very luxuriant, some trimming and pruning, and even cutting down, must, of course, annually be done; but there is no excuse for doing it so recklessly, and in the middle of summer, when many weeks of rich beauty are still possible, and no excuse for leaving the mowed-down plants in dead brown heaps. It is dismal and exasperating to see, where yesterday there were long broad patches of Golden-rod just bursting into bloom, to-day long broad piles of brown rubbish, hideously ugly in themselves, and destructive to the effect of the hedge-rows or forest-edges which lie beyond them. But Golden-rod is not the only plant which is thus piled up along our drives. Young Maples and Pines and Tupelos, which, if thinned discreetly, or even if left to themselves, would eventually shade tracts of road which now are hot and sunny, are felled without mercy, and likewise left to rot slowly on the spot, often to its disfigurement during more than one subsequent season. It is, indeed, fortunate for us that our soil is exceptionally favorable to the growth of way-side vegetation; for, otherwise, it is impossible to say how soon the loveliest portions of our high-road borders might be rendered wholly barren by the road-agent's scythe.

New York, N. Y. *M. G. Van Rensselaer.*

Vaccinium ovatum as a Hedge-plant.

To the Editor of Garden and Forest:

Sir,—One of California's most beautiful hedge-plants is entirely overlooked in its native state, owing to the craze for foreign plants. No matter how insignificant the flower or straggling the growth of a plant may be, if it comes from Australia, New Zealand, Japan or China, it meets with a ready sale here, while plants like the beautiful native evergreen Blueberry (Vaccinium ovatum) cannot be found in any nurseryman's catalogue, and I doubt if there are a dozen plants in cultivation in the whole state.

This plant has several qualities which recommend it; it is an evergreen with beautiful flowers, followed by pretty berries, a delight to the eye and to the palate. It grows from three to eight feet high, with small, thickly set, bright, shining green leaves, their edges slightly tinged with red during the winter; the stems are red, and the flowers, which are borne in racemes, although small, are very numerous; they are white, tinged with pink, and are followed by black or dark purple berries.

Vaccinium ovatum is very tenacious of life and bears pruning well; it may be propagated from suckers, cuttings and seed, which it bears in profusion, and I have occasionally found ripe fruit and flowers together on the same plant.

I have found V. ovatum growing in the Coast-range in Santa Cruz County and in Marin County, and on the northern slope of the Siskyou Mountains near their junction with the Coast-range. It grows most abundantly on the northern slopes, but is often found growing luxuriantly on southern slopes exposed to the full rays of the sun.

Larkspur, Cal. *T. H. Douglas.*

The Common Names of Plants.

To the Editor of Garden and Forest:

Sir,—I read with interest the remarks of your correspondent, H. Christ, about the Edelweiss craze and the origin of its romantic name, its original people's name being quite unromantic. It is a sort of text for a sermon. Much super-sentimentalism has been printed as to the familiar names of plants, and much contempt expressed for their scientific names; as though English names, however meaningless, were more poetic and, so to speak, affectionate than Latin ones. To a certain extent this is true; but it is a truth which rests mainly upon habit. This very plant, Edelweiss, has a foreign sound in English mouths. If these had begun by calling it Leontopodium, that name would be as pleasant to hear as the German for noble white. Everybody nowadays speaks familarly of Gladiolus, Lantana, Begonia and scores of other common plants, as one does of Rose, Lily and Violet. To the real lover of plants, as well as to the systematic botanist, the Latin names sound as sweetly as the English. There has been no little superficial gush written about the old names which have come down to us through the changing speech of the old English people, names which had no meaning to them beyond the mere sound. In some cases they have, unquestionably, a certain prettiness. But I am willing to say that the Latin names are, in most instances, as euphonious, and in many cases more so, as the English ones. The meaning of the English names, in very many instances, originates in their reputed medicinal properties, not from any poetic associations among the English peasantry.

I give a few examples of the common and scientific names:

Marigold: from Mary Gowles, Ang. Sax., meaning marsh, horse, gowl,	Calendula.
Mullein: French, moleine, scab in cattle,	Verbascum.
Columbine: Latin, columba, a pigeon,	Aquilegia.
Cowslip: Flemish, kousloppe, hose flap,	Primula.
Motherwort: from supposed medicinal qualities,	Leonurus.
Maiden: a prefix to several plants; not love meanings, but they were supposed to have medicinal effects.	
Pink: Dutch, old word for Whitsuntide,	Dianthus.
Rose: like the Latin,	Rosa.
Lily: " " "	Lilium.
Violet: " " "	Viola.
Pansy: from the French, pensée,	Viola.
Daisy: Day's-eye,	Bellis.
Flower de luce, / Fleur de lis, } French, fleur de Louis,	Iris.
Lay-lock, / Lilac, }	Syringa.
Candytuft,	Iberis.
Honeysuckle,	Lonicera.
Primrose: a vulgarization of the French prime-role, prime-rolles,	Primula.
Bachelor's Buttons,	Scabiosa.
Lady's Smock: in England, from the white flowers in spring,	Cardamine.
Cuckoo-buds: which blossomed when the cuckoo came,	Ranunculus.

All of these Latin names are as pleasant to say as the English ones. A study of the derivation of the old English names deprives most of them of all the sentiment with which time and association has clothed them. The truth is, that what we are familiar with we become fond of, and our children and grandchildren will associate with the Latin names, now used familiarly, all of the poetry and sentimentality which we and our progenitors have associated with the old English ones, embalmed in poetry and romance. Emerson's lines to the Rhodora have more tenderness and beauty than if he had called it a Swamp Pink.

Boston. *C. J. S.*

Annuals for Cut Flowers.

To the Editor of Garden and Forest:

Sir,—In the flower-garden on our farm at Littleton, New Hampshire, there are fourteen regular oblong beds. I do not remember their dimensions, but they are wide enough to allow the centre to be reached easily. Can you suggest to me the best annuals to plant in these beds, such as are easily grown, and to be used entirely for cut flowers. The intention is to grow only one variety in each bed. The garden is formal and not in sight from the walks.

I do not wish to include Poppies, Lupins or Sweet Peas, which we grow in large quantities in other places.

Chicago, Ill. *F. M. G.*

[Annuals are so numerous that one would hesitate to name fourteen as the best; but as our correspondent notes that they shall all be useful for cutting, the problem is much narrowed. We should recommend as the most lasting annuals, China Asters (Comet, Truffant and Victoria),

single and double Calendulas, Calliopsis, Centaurea cyanus, Chrysanthemum coronarium, Marguerite Carnations, Marigolds, Mignonette, tall Nasturtiums, ten-week Stocks, Pansies, Sweet Sultan, miniature Sunflowers and Zinnias. As alternates, useful flowers are Sweet Alyssums, Torrenias, Acrocliniums, Rhodanthes and Gaillardias. Among useful perennials, which will flower from seed during the first season, are Snapdragons, Single Dahlias, Salvia splendens and Gypsophila paniculata; the latter is almost indispensable for mixed bouquets. Fancy or taste would, of course, modify this list.—ED.]

New Cypripediums.

To the Editor of GARDEN AND FOREST:

Sir,—Among the new hybrid Cypripediums in the United States Nurseries at Short Hills, New Jersey, and of which general mention was made in a recent number of GARDEN AND FOREST, are the following:

CYPRIPEDIUM TONSO-VILLOSUM.—This distinct hybrid was obtained by crossing C. tonsum with the pollen of C. villosum. Leaves long, broad, light green, beautifully tessellated with a darker green; stem ten to twelve inches high and light green. Flower large and bold, well proportioned; dorsal sepal large, pointed, reflexed at the top, ground color green-yellow, shaded and lined with dark brown. Petals large and broad, yellowish green, with a mid-line of dark brown color and shaded with a similar color in the upper portion. The upper part of the petals is similar to those of C. tonsum, having no hair along the edge. Lip large and long, with a large opening, yellowish green, shaded with light brown.

CYPRIPEDIUM LEEANUM AMPLIATUM.—Among the many varieties of C. Leeanum, the above hybrid, raised and flowered lately, may be considered the gem. The flower is one-third larger in all its parts than the type; dorsal sepal broad, with fine, large, purplish spots, as in C. insigne Chantini; petals broad, dark brown; lip large, round, with a large opening of a dark brown-purple color, almost black.

CYPRIPEDIUM SALLIERII PICTUM.—This is a very distinct type of C. Sallierii, having for its parents C. villosum superbum and C. insigne Chantini; dorsal sepal yellow, shaded with brown to about half of its surface, while the upper portion is white, lined and shaded with old rose color.

CYPRIPEDIUM VERNIXIUM PUNCTATUM.—A fine and distinct variety having the dorsal sepal recurved at the top; ground color white in the upper part, yellowish green in the lower part, and spotted all over with small brown-purple dots; petals long and drooping, spotted with large brown-purple spots; lip small, yellowish green, shaded and veined with brown-purple.

Short Hills, N. J. *Joseph Manda, Jr.*

Flowers in Winter.

To the Editor of GARDEN AND FOREST:

Sir,—I was interested in the article, "Flowers in Winter," in your issue of February 15th. I have forced Forsythia and also Cherry blossoms in March. Two years ago I took up Crocuses and Daffodils which had pushed their way to the surface too early in the season, and they bloomed in a very short time in the house. Some two or three weeks ago I found Hyacinths appearing above ground in a sheltered place in the garden, one of which I dug up and planted in a pot. This is now in bloom in my window-garden, while those in the garden are again hidden under the snow.

Bath Beach, N. Y. *A. M. Lott.*

Recent Publications.

A Contribution to our Knowledge of Seedlings. By Sir John Lubbock, Bart., M.P., F.R.S., etc. Two volumes, with 684 figures in the text. New York: D. Appleton & Co.

Sir John Lubbock has already discussed the various forms of leaves and the causes to which the endless differences they present can be ascribed; and in the two stout volumes now before us he has collected the results of his comprehensive observations, carried on through many years, upon the forms of cotyledons or seed-leaves, a subject which, strangely enough, has never attracted the special attention of botanists, although the fact is well known that they differ, often remarkably, from later leaves on the same plant. The explanation of this difference between the first and subsequent leaves has never been satisfactorily explained, and it does not appear, in spite of the vast amount of matter bearing upon the subject which Sir John Lubbock has here brought together, that he has succeeded in forming a good working hypothesis for its solution. Cotyledons, while they do not vary to such an extent as leaves, differ considerably one from another. Some plants with narrow cotyledons have broad ultimate leaves, while in others narrow leaves succeed broad cotyledons. In some families there are genera with broad and with narrow cotyledons; and this peculiarity appears occasionally in different species of the same genus. Sometimes the two cotyledons are unequal; in others the two sides of each are unequal, as in the Geranium. They are sessile or petiolate, and are sometimes united together at the base; they are usually entire, sometimes crenate or emarginate, or two-lobed at the apex, as in the California Eschscholtzia, usually leaf-like, but in many plants like the Bean, Pea, Oak, etc., thick and fleshy. All these forms, and many others, are discussed in the introduction, while the main body of the book is devoted to a systematic account of the seedlings of an enormous number of plants in many genera and families. The young plant of each species is illustrated by a capital outline drawing from material furnished, for the most part, from the propagating-houses of Kew, where a larger variety of plants is grown than in any other one place in the world, and without which such a work as this would have been impossible.

To the systematic botanist, whose business it is to describe plants, Sir John Lubbock's new contribution to science will be of invaluable service, while gardeners and others who study and raise plants will find in it a mine of useful and interesting information set forth in a clear and convenient form.

A Text-Book of Tropical Agriculture. By H. A. Alford Nicholls, M.D., F.L.S., etc. Macmillan & Co.: London and New York. 1892.

Tropical agriculture means a good deal more to the world than untraveled persons living outside the tropics often realize. It supplies a large portion of the human race with its great food-staple, rice, and with many of its luxuries, to which it is now so accustomed that they seem necessities, for it is in the tropics that coffee, sugar, chocolate and most of the tobacco used in the world are raised. The Tea-plant grows on their borders, as does the Orange, the Lemon and all the citrus fruits. The Banana and the Cocoanut only ripen their fruit in the tropics, which is the home of the Pepper-plant, the Spice-trees, the Ginger, the Vanilla, and of the plants from which many of the most important drugs are derived. It is astonishing, therefore, how little of practical value, suitable for elementary instruction, has been written on this subject, and the field was free for a good text-book. This Dr. Nicholls seems to us to have produced.

The history of his book shows that it has already proved valuable. Some time ago the government of Jamaica offered a prize for the best text-book of tropical agriculture. The author of the present work obtained it. The manuscript, with some additions, was published in 1891 by the Jamaica government and has since been adopted officially in other colonies. *The Text-Book of Tropical Agriculture*, as it now appears, is an enlarged edition of this work.

Agriculture, in its relations to tropical America, is of special interest to us in this country because we are dependent upon the West Indies and Central America for a constant and cheap supply of tropical fruits, and everything that serves to stimulate the intelligence of West Indian planters and increase the product of their plantations is of direct benefit to us as a nation.

Under the press of European competition, sugar-raising has, in many cases, been found unprofitable in the Antilles, and planters have been obliged to put their land to a different use. This cannot be always accomplished at once, and in order to aid in developing profitable farming under new conditions several of the colonial governments have introduced the subject of scientific agriculture into the schools and colleges, and for this purpose, and for the general reader interested in the products of the soil, this book has been found to stand the test of several years' use. The leading facts connected with soils, plant-life, fertilizers, tillage, the rotation of crops, are clearly and intelligently discussed in the first part, while the second part is devoted to practical advice for the cultivation of a large number of tropical plants.

Great progress, no doubt, has been made in some of the West Indies in improving agriculture, but how far the planters will be able to overcome the difficulties of the labor question and adapt themselves to new conditions still remains to be proved. If they succeed in obtaining cheap and reliable labor there is no reason why the cultivation of these islands and that of a large part of tropical America cannot gradually be made more profitable, as the demand for tropical fruits

increases in the United States, than it has ever been. The Coffee-leaf disease has almost exterminated the cultivation of Coffee in the east, so that the world, which is every year consuming a larger quantity of the berry, must rely upon America for its supply. The cultivation of Cocoa has increased largely of late years in the West Indies and Central America, and apparently the demand is only limited by the supply. Spices, like nutmegs and cloves, can be grown apparently as successfully in the West Indies as in their home in the east. Of bananas, cocoanuts, pineapples and oranges, the United States consumes at fair prices all that are sent here. The market, therefore, for the crops of tropical American plantations is not wanting. That the people are making a serious effort to improve their opportunities the appearance of a second edition of a practical book of this character seems to indicate.

Notes.

In England toads are valued as destroyers of insects and are offered for sale at a shilling apiece, it is said, in the London markets, being bought by market-gardeners.

A special course of practical instruction in botany is announced by the Brooklyn Institute of Arts and Sciences, to begin March 17th. The course is under the direction of Dr. Thomas Morong, of Columbia College, and will comprise fifteen illustrated lectures and ten field-meetings.

A Belgian horticultural journal, referring to Professor L. H. Bailey's *Annals of Horticulture* for the year 1891, notes its assertion that, of the ten thousand plants indigenous to the temperate regions of America, more than 2,400 are in present cultivation, and adds: "This seems to show that Americans do not despise their native flora as people do elsewhere, in favor of foreign species, which are often less valuable and in no way adapted to their climate."

The ability to identify trees in winter by the appearance of their buds and the markings of the so-called bare twigs adds greatly to the pleasure to be derived from them and by awakening a new interest in these daily associates of our lives, adds a new charm to the winter landscape. In Boston and in several of the neighboring towns, Miss Frances Prince, who has made a careful and critical study of the subject, has been delivering, during the past two winters, a series of lectures on the winter aspects of trees, which have been attended by large and interested classes and have met with marked success.

An Irishman might certainly be expected to know what the Shamrock is. It appears, however, from a paper recently printed by Mr. Nathaniel Colgan, in *The Irish Naturalist*, that all Irishmen are not agreed as to the identity of their national flower. Mr. Colgan, in order to investigate the matter, obtained what was professed to be the genuine Shamrock from eleven counties. The specimens were planted and carefully labeled with the places of origin, and when they flowered two months later the plants from eight counties proved to be Trifolium minus, and those from five counties Trifolium repens, while two counties, Armagh and Carnow, each of which contributed two specimens, were divided on the question, one district in each sending Trifolium repens and the other Trifolium minus. It is noted that in North Down Trifolium minus is always regarded as the true Shamrock, although a vigorous specimen or one in flower is usually regarded as an impostor.

Among noteworthy new Carnations shown at the recent meeting of the American Carnation Society, in Pittsburgh, was a white flower which it is proposed to name for Mr. John Thorpe, exhibited by Mr. Frederick Dorner. The form and size were good and the petals nicely disposed, but the stem was hardly stout enough. The judges recommended certificates of merit to Richmond, Madame Diaz Albertina, Edna Craig and William Scott; the last two were the best light pink varieties on exhibition, Thomas Cartledge being the best dark pink. Varieties reported as doing well on the Pacific coast include Anna Webb, Thomas Cartledge and President Degraw. For spring pot-cultivation, Mr. Thomas Cartledge recommended Century for deep pink; Robert Craig for scarlet; Lizzie McGowan or Peter Henderson for white; Buttercup for yellow; Sunrise and American Flag for variegated. Carnation diseases and proposed remedies were among the most important subjects considered. The committee on nomenclature request growers to have the names of meritorious seedlings registered promptly, as a matter of record and to prevent duplication. Since the organization of the society in 1891 the membership has grown to nearly one hundred and fifty, under the retiring President, Mr. Edwin Lonsdale. The next annual meeting will be held in Indianapolis, with Mr. E. G. Hill as the presiding officer.

With the advance of the Lenten season there is less demand for cut flowers in general. Choice stock, however, continues to sell freely, the best American Beauty, Magna Charta and Ulrich Brunner Roses bringing eighteen dollars a dozen in this city. Violets are from one to two dollars a bunch, and a dozen stems of Lily-of-the-valley cost one dollar. Mignonette is in popular favor, specially fine sprays selling as high as twenty-five and fifty cents each. A variety of early vegetables is to be had, notwithstanding the prolonged cold weather has retarded hot-house crops in the north and seriously affected field crops in Florida. Malaga grapes are offered at from thirty to sixty cents, and the best Gros Colman, from England, for three dollars and fifty cents a pound. Hot-house cucumbers from Long Island may be had for forty cents each; strawberries from Florida for one dollar and seventy-five cents a quart, and a smaller and better berry from Hackensack, New Jersey, is one dollar for a cup box. The finest Navel oranges are one to two dollars a dozen, and grape-fruits cost almost as much. Large pineapples may be had as low as fifty cents. Among pears, Winter Nelis are one dollar and twenty-five cents and Easter Burré two dollars a dozen. Northern Spies and Spitzenberg are the best apples in the market now, and, assorted, cost sixty cents a dozen. The crop of tomatoes due from the northern hot-houses is delayed by the weather, and the small supply which has come from Florida sells at thirty-five cents a pound. The experiments in shipping fruits from Africa and Australia to England last year are recalled by the arrival here, a week ago, of two dozen peaches, said to have come from the Cape of Good Hope. These sold for as much as three dollars apiece, the last one being offered yesterday for one dollar.

Jacob Weidenmann, the well-known landscape-gardener, died at his residence in Brooklyn, on the 6th of February. Born in Switzerland in 1829, Mr. Weidenmann studied architecture in Munich, and then, having traveled extensively in Europe, came to America. Here he first found employment as an engineer on the Panama Railroad, and later visited Peru, where he practiced his profession during two years. After a short stay in Europe, he came to this country and adopted the profession of landscape-gardening, which he continued to practice during thirty-seven years, until his death. He lived in Hartford, Connecticut, for many years, as superintendent of the public parks, and laid out Cedar Hill Cemetery in that city. At one time he was associated with Mr. Frederick Law Olmsted, with whom he was engaged on a number of important works, such as the grounds of the Schuylkill Reservoir, in Philadelphia, and Congress Spring Park, Saratoga. He was employed upon the Hot Springs Reservation, in Arkansas, the grounds of the Iowa State Hospital for the Insane, and of the St. Lawrence State Hospital, in this state, and upon many public and private works. At the time of his death Mr. Weidenmann was engaged in laying out Mr. A. A. Pope's Cottage Park, in Hartford. Mr. Weidenmann was an accomplished and gifted man, and after sixty years of study and practical experience he was full of vigor and energy in his work. His death is a loss to a profession in which the laborers are few and the demands made upon them are heavy and exacting.

Catalogues Received.

C. S. Curtice Co., Portland, N. Y.; Illustrated Catalogue of Roses, Vines, Fruit and Ornamental Trees, Descriptive Catalogue of Grape-vines and Small Fruit Plants.—T. J. Dwyer, Cornwall-on-Hudson, N. Y.; Vegetable Plants, Small Fruits, Vines, Shrubs, Fruit and Ornamental Trees.—J. Wilkinson Elliott, Pittsburgh, Pa.; Cannas, Irises, Gladioli and Hardy Plants.—Edward Gillett, Southwick, Mass.; Bulbs, Native Shrubs, Wild Flowers and Ferns.—Peter Henderson & Co., 35 and 37 Cortlandt Street, New York, "Manual of Everything for the Garden," Descriptive Illustrated Catalogue, 25c.—Hitchings & Co., 233 Mercer St., New York; Hot Water Boilers and Heaters, Pipes and Pipe Fittings for Greenhouses, Conservatories and Graperies, Illustrated Catalogue of Greenhouse Construction.—Jacob W. Manning, Reading, Mass.; Recently Introduced Trees, Shrubs, Vines and Hardy Herbaceous Perennials.—John R. & A. Murdoch, Pittsburgh, Pa.; Flower and Vegetable Seeds, Greenhouse, Stove and Hardy Plants, Bulbs, Fruit and Ornamental Trees.—Phœnix Nursery Company, Bloomington, Ill.; Wholesale Catalogue of Trees, Plants, Shrubs, Roses and Bulbs.—Pitcher & Manda, The United States Nurseries, Short Hills, N. J.; Descriptive Catalogue of Selected Novelties in Chrysanthemums.—A. M. Purdy, Palmyra, N. Y.; Flower and Vegetable Seeds, Small Fruits and Fruit Trees.—Stark Bros., Louisiana, Mo.; Wholesale Price List of Fruit Trees.—J. H. Tryon, Willoughby, O.; Descriptions of Small Fruits and Fruit Trees, A Treatise on Grape Culture.